PSP Calibration Using Alternate Method (CALC)

I. Purpose:

The purpose of this procedure is to describe the steps performed by the RESET team to check the calibration of the PSP using the Forgan alternate procedure. This procedure simply involves switching the shaded and unshaded PSP's once during RESET visit (best if before second of two clear sky days). **Note: this procedure is not normally performed yet on routine RESET visits.**

II. Cautions and Hazards:

- Take care when climbing onto or next to the radiation stand while switching shaded and unshaded PSP instruments. The control unit for the Cavity Radiometer run in 110 Volt AC power (240V interval). Only RESET team members trained in electrical safety conduct these procedures.

III. Requirements:

- Two people are recommended for switching of instruments.
- Tools for removal of PSP's from SKYRAD stand and Brusag tracker.

IV. Procedure:

A. Steps:

1. Switch the shaded and unshaded PSPs near solar noon on a clear day.
2. Mount cavity radiometer if possible.
3. Mount reference radiometers to SKYRAD radiation stand and connect instruments to Calibration Datalogger.
4. Collect data through the afternoon of a second day, if possible, making sure to log the start and end times on instrument replacement forms and configuration files for the accurate comparison of the tested instruments.
5. Contact mentor so that the mentor knows that the switch was performed.
6. Make note of switch in site log book.
7. Fill out the calibration record and if the mentor suggests changing the calibration coefficient in the datalogger, do so after filling out an Instrument Replacement and Configuration Change Record.

V. References:

1. Cornwall, C., "Recommended Radiometer Calibration Procedures for ARM/ARCS," NREL June 16, 1995.

VI. Attachments:

1. FM(NIP)-001 Cavity Radiometer Calibration Form
2. Example of Completed Form

Attachment 1: FM(NIP)-001 Cavity Radiometer Calibration Form

ARCS NIP/Cavity Radiometer Calibration Check Form

I. Calibration information

This is a (check which):	Calibration	Calibration Check	Field Calibration
		X	

Date:	GMT Begin Time:	GMT End Time:	ARCS #

Instrument / System:	TWP OMS Part Number(s):	TWP OMS Serial Number(s):

Location	Participant(s):	Issued by:	Signature(s):

Reference Instrument(s):	TWP OMS Part Number(s):	TWP OMS Serial Number(s):
Cavity Radiometer	Cavity	30494

Current Configuration Version:	New Configuration Version

II. Initial Values

Sensor/Element:	Reference (Cavity)	Reading	Reference	Reading	Reference	Reading

III. Final Values

UNCHANGED: ☐ CHANGED: ☐

Sensor/Element:	Reference (Cavity)	Reading	Reference	Reading	Reference	Reading
NIP SKYRAD						

IV. Statistics (if applicable)

No. of Samples:	Std. Dev.	CF Range %	Uncertanty %

V. Calilbration Change (if applicable)

Sensor or Parameter	Sensor Serial No.	Internal Resistance (Ohms)	Original Sensitivity (Volts/Unit)	Offset	Quadratic
	Old	Old	Old	Old	Old
	New	New	New	New	New

Document(s) Referenced:	Document(s) Updated:
PRO(IRT)-005.001	

PROBLEMS:

NOTES:

Attachment 2: Example of Completed Form

ARCS NIP/Cavity Radiometer Calibration Check Form

I. Calibration information

This is a (check which):	Calibration	Calibration Check	Field Calibration
		X	

Date:	GMT Begin Time:	GMT End Time:	ARCS #
11/15/1998 to 11/16/1998	21:00	3:00	2

Instrument / System:	TWP OMS Part Number(s):	TWP OMS Serial Number(s):
NIP SKYRAD	NIP	29937E6

Location	Participant(s):	Issued by:	Signature(s):
Nauru	W. Porch	W. Porch	
	D. Scott		

Reference Instrument(s):	TWP OMS Part Number(s):	TWP OMS Serial Number(s):
Cavity Radiometer	Cavity	30494

Current Configuration Version:	New Configuration Version
V981111.00	no change

II. Initial Values

Sensor/Element:	Reference (Cavity)	Reading	Reference	Reading	Reference	Reading
NIP SKYRAD	899	928	914	943	917	946

III. Final Values

UNCHANGED: [x] CHANGED: [ ]

Sensor/Element:	Reference (Cavity)	Reading	Reference	Reading	Reference	Reading
NIP SKYRAD						

IV. Statistics (if applicable)

No. of Samples:	Std. Dev.	CF Range %	Uncertanty %
3			

V. Calilbration Change (if applicable)

Sensor or Parameter	Sensor Serial No.	Internal Resistance (Ohms)	Original Sensitivity (Volts/Unit)	Offset	Quadratic
	Old	Old	Old	Old	Old
	New	New	New	New	New

Document(s) Referenced:	Document(s) Updated:
PRO(IRT)-005.001	

PROBLEMS:
The cavity was also set up on 11/13 and we could not get the cavity controller to work. We found that the power at the stand 110 V 50 Hz was causing the problem and running an extesion cord with 110V 60 HZ solved the problem (however the procedure says that 50 Hz is OK for the controller). Will check with mentor.

NOTES: